

**What Is Claimed Is:**

1. A liquid crystal display device comprising:
- a first substrate having a first surface, a second surface, and a reference line;
  - a first alignment layer formed on the second surface of the first substrate;
  - a second substrate having a first surface and a second surface;
  - a second alignment layer formed on the second surface of the second substrate;
  - a molecular liquid crystal layer between the second surface of the first substrate and the second surface of the second substrate; and
  - a pair of electrodes formed in parallel on the second surface of the first substrate.

099836 102201

2. A liquid crystal display device according to claim 1, further including:

a polarizer formed on the first surface of the first substrate and having a transmittance axis; and

an analyzer formed on the first surface of the second substrate and having a transmittance axis.

3. A liquid crystal display device in accordance with claim 1, wherein the molecules of the liquid crystal layer adjacent to the second surface of the first substrate are aligned parallel to the reference line of the first substrate.

4. A liquid crystal display device in accordance with claim 1, wherein the molecules of the liquid crystal layer adjacent to the second surface of the first substrate are aligned perpendicular to the reference line of the first substrate.

5. A liquid crystal display device in accordance with claim 1, wherein the distance between the electrodes is less than the thickness of the liquid crystal layer.

6. A liquid crystal display device in accordance with claim 2, wherein the transmittance axis of the polarizer is perpendicular to the transmittance axis of the analyzer.

7. A liquid crystal display device in accordance with claim 2, wherein the transmittance axis of the polarizer is parallel with the alignment direction of the liquid crystal molecules adjacent to the second surface of the first substrate.

8. A liquid crystal display device in accordance with claim 2, wherein the first substrate has a reference line and wherein the electrodes are formed at an angle of  $\theta_{EL}$  with respect to the reference line of the first substrate, and wherein  $0^\circ < \theta_{EL} < 90^\circ$ .

9. A liquid crystal display device in accordance with claim 8, wherein the angle  $\theta_{EL}$  includes  $85^\circ$ .

10. A liquid crystal display device in accordance with claim 8, wherein  $90^\circ < \theta_{EL} < 180^\circ$ .

11. A liquid crystal display device in accordance with claim 10, wherein the angle  $\theta_{EL}$  includes  $95^\circ$ .

5 12. A liquid crystal display device in accordance with claim 2, wherein the liquid crystal layer has a retardation value  $\Delta n d$  in the range of  $\lambda/2 < \Delta n d < \lambda$  (wherein,  $\Delta n$  is the refractive anisotropy,  $d$  is the thickness of liquid crystal layer, and  $\lambda$  is a wave length, wherein the retardation value  $\Delta n d$  of the liquid crystal includes  $0.74\lambda$ ).

5 13. A liquid crystal device in accordance with claim 2, wherein the first alignment layer is formed from a different material than the second alignment layer, and the material for the first alignment layer has a smaller anchoring energy with respect to liquid crystal molecules than the anchoring energy with respect to liquid crystal molecules of the material for the second alignment layer.

14. A liquid crystal display device in accordance with claim 2, wherein the material for the first alignment layer includes an inorganic material.

15. A liquid crystal display device comprising:  
a first substrate having a first surface, a second surface and a reference line, the second surface of

the first substrate being coated with a first alignment layer;

a second substrate having a first surface and a second surface, the second surface of the second substrate facing the second surface of the first substrate;

a molecular liquid crystal layer between the second surface of the first substrate and the second surface of the second substrate;

a pair of electrodes formed on the first substrate, the electrodes being parallel to each other and angularly disposed by the angle  $\theta_{EL} \neq 0^\circ$  with respect to the reference line of the substrate;

a polarizer attached to the first surface of the first substrate; and

an analyzer attached to the first surface of the second substrate.

16. A liquid crystal display device in accordance with claim 15, wherein an alignment direction of liquid crystal molecules adjacent to the first substrate is parallel to the reference line of the first substrate.

17. A liquid crystal display device in accordance with claim 15, wherein an alignment direction of

liquid crystal molecules adjacent to the first substrate is perpendicular to the reference line of the first substrate.

18. A liquid crystal device in accordance with claim 15, wherein the polarizer has a transmittance axis perpendicular to a transmittance axis of the analyzer.

19. A liquid crystal display device in accordance with claim 15, wherein the polarizer has a transmittance axis parallel to the alignment direction of the liquid crystal molecules adjacent to the second surface of the first substrate.

20. A liquid crystal display device in accordance with claim 14, wherein the electrodes are formed at an angle of  $\theta_{EL}$  with respect to the reference line of the first substrate and wherein the angle  $\theta_{EL}$  includes  $0^\circ < \theta_{EL} < 90^\circ$ .

21. A liquid crystal device in accordance with claim 20, wherein the  $\theta_{EL}$  includes  $85^\circ$ .

22. A liquid crystal device in accordance with claim 15, wherein  $\theta_{EL}$  includes  $90^\circ < \theta_{EL} < 180^\circ$ .

23. A liquid crystal device in accordance with claim 21, wherein the angle  $\theta_{EL}$  includes  $95^\circ$ .

24. A liquid crystal device in accordance with claim 15, wherein the liquid crystal layer has a retardation value  $\Delta n d$  and wherein  $\lambda/2 < \Delta n d < \lambda$  ( $\Delta n$  is the refractive anisotropy of the liquid crystal layer,  $d$  is the thickness of liquid crystal layer, and  $\lambda$  is a wave length of light, and wherein the retardation value  $\Delta n d$  of the liquid crystal is  $0.74\lambda$ ).

25. A liquid crystal device in accordance with claim 15, further including a second alignment layer on the second surface of the second substrate, the first alignment layer and the second alignment layer being made of different materials, and wherein the material of the first alignment layer has a smaller anchoring energy with respect to liquid crystal molecules than the anchoring energy of the material of the second alignment layer.

26. A liquid crystal display device in accordance with claim 15, wherein the material for the first alignment layer includes an inorganic material.

27. A liquid crystal display device in accordance with claim 15, wherein the distance between the electrodes is less than the thickness of the liquid crystal layer.

Added  
B1

0998336-10201  
T0220T-92828650